este Brasileiro: estado do arte. Soc. Brasil. Geol. XIV Simpósio de Geologia do Nordeste, 12:59–62.
Meyer, H. von. 1861. Vögel-Federn und Palpipes pricus von Solnhofen. Neues Jahrb. Mineral., Geol., und Paläntol. 1861:561.
Rayner, R.J. 1987. March flies from an African Cretaceous springtime. Lethaea 20:123–127.
Taylor, T.N. and E.L. Taylor. 1992. The Biology and Evolution of Fossil Plants. Prentice-Hall, Englewood Cliffs, N.J. 982 pp.

J. New York Entomol. Soc. 101(4):585–587, 1993

Reproductive Behavior of Insects. Individuals and Populations.—W. J. Bailey and J. Ridsdill-Smith (eds.). 1991. Chapman and Hall. 339 pp. $95.

It may surprise many people that students of insect behavior have few books in their discipline with which to line their shelves. I know of three that purport to cover the broad spectrum of insect behavior, and frankly, they come up somewhat short. Considering the tremendous amount of work that has been done in this field, why does this void exist? The great diversity of behavior across this taxon obviously makes it a daunting task and the scarcity of college courses offered for this speciality translates to limited sales for the effort. Thus, the literature consists largely of edited volumes with narrower foci, often the outcome of a conference symposium. *Reproductive Behaviour of Insects* falls into this category. Its eleven chapters are the work of thirteen authors, some but not all of whom were part of a symposium of the Australian Entomological Society. The obvious question to be asked is "How far does this contribution go towards helping to fill the void?" The quick answer, unfortunately, is "not far."

Reproductive behavior can be viewed as a subset of behavior, but its boundaries are difficult to define. Arguably, few behaviors could be divorced from a direct or indirect role in the ultimate context of fitness—reproductive success. So, when the editors define reproductive behavior in chapter 1 as "the finding of mates, choice of mates, selection of oviposition sites, and the factors affecting the fitness of larvae," one would be hardpressed to eliminate any of these factors. However, it seems likely that this is a convenient definition based on the contents of the contributed chapters, given that other behaviors influencing reproductive fitness are omitted (e.g., adult feeding and predator avoidance). But I won't complain too much about the selective inclusion because the leaf-feeding larvae chapter is one of the better ones.

Most accounts of insect reproductive behavior limit themselves to the more narrow focus of mating and oviposition. The literature on the behavioral ecology of insect mating systems has two volumes that stand out: *Sexual Selection and Reproductive Competition in Insects,* edited by Blum and Blum; and the highly acclaimed *The Evolution of Insect Mating Systems* by Thornhill and Alcock. *Reproductive Behaviour in Insects* falls well short of either with respect to new contributions towards evolutionary explanations of mating behavior (although Alcock and Gwynne's chapter does a very good job of summarizing the evolutionary approach to studying and understanding insect mating behavior). Therefore, it is fortunate that the majority

(seven) of the chapters in this volume deal with oviposition behavior and that five of these are specifically related to host location and/or host selection.

It is not easy to provide a coherent, and yet brief, overview of this eclectic assemblage of chapters. The first two chapters are efforts to inform the uninitiated that individual variation is important to consider for a full (evolutionary) understanding of reproductive behavior in any species. In the remaining chapters, only two deal directly with mating behavior (Chapter 3: sensory cues, primarily acoustic, and Chapter 10: aspects of mating in dung insects as they relate to competition for the dung resource). Chapters 4 through 8 review host location and oviposition by insects on animals in general, on plants in general, by tephritids specifically, by Heliothinae specifically, and by aphids specifically. Chapter 9 describes oviposition and brood defense in social wasps and Chapter 11 discusses the empirical and theoretical studies on the relationship between larval feeding behavior and overall fitness in leaf feeders. Inevitably, the amount of research that has been done on these subjects is revealed in the thoroughness of coverage for each chapter. Only a couple of the chapters consistently provide suggestions for empirical studies that would be worthy of pursuit in the future.

The subtitle "Individuals and Populations" reflects a stated objective of this volume which is to help bridge the gap between the population biology view of reproductive behavior and the focus on individual variation and its effect on reproductive success. Tied to this is another stated goal of introducing "selectionist thinking to a wider audience of entomologists," meaning those in the applied area whose backgrounds have not provided an evolutionary perspective to their research. Are these goals accomplished? Some chapters, those by Alcock and Gwynne, Jones, and Reavey and Lawton in particular, champion these aims with clear presentations. However, many other chapters not only do little to help enlighten readers, but are actually guilty of much population and species level generalization regarding behavior. Also the book suffers from the same problems found with most symposia volumes, a lack of connectivity across the chapters and highly variable quality of writing between contributors. The lack of continuity means that this is not the best source for "learning" the importance of a selectionist perspective in applied problems. Some chapters are exceptionally lucid, but others have sections that must be read multiple times to grasp the point. And in some cases the end result is a message that would be outright misleading to a reader naive in the realm of evolutionary ecology. In particular, chapters by Wellings and Ridsdill-Smith contain several claims that one or another behavior has an impact on individual fitness, but fail to explain how. I should point out that Ward's chapter provides very clear explanations of "adaptive" arguments.

Although the editing with respect to readability is weak for some chapters, I found few outright typographical, spelling, or grammatical errors with the exception of one chapter (ironically, it is coeditor Bailey's chapter). The print and figures are excellent and the binding seems to be high quality.

Since applied entomologists were a declared target audience of this book, I was curious as to whether it was hitting this mark. I conducted a small, highly nonstatistically-sound survey of applied entomologists with respect to two questions: Have you heard of this book? If so have you read or purchased it? Of the 26 applied entomologists from four institutions, five individuals had heard of the book, and of

those, two had purchased it. Interestingly, four out of six evolutionary biologists (working with insects) that I asked were aware of the book.

Unfortunately, I cannot in good conscience recommend the purchase of this book to all those interested in insect reproductive behavior. I would suggest looking through a copy if possible to determine whether or not more than one chapter is pertinent to your work and provides you with new perspectives. Let that perusal be your guide to a purchase decision. At US$95 it is hardly a take-a-chance bargain.—*Gary Dodson, Biology Department, Ball State University, Muncie, Indiana 47306.*

J. New York Entomol. Soc. 101(4):587–589, 1993

A Field Guide to Eastern Butterflies.—P. A. Opler and V. Malikul. 1992. The Peterson Field Guide Series. Houghton Mifflin Company, Boston, New York, London. xiii +396 pp., 48 color plates. $16.95.

As would be expected of a new "Peterson Field Guide," particularly this one as successor to A. B. Klots' classic "Guide" of the 1950's (Klots, 1951), this new book must fill the role of "be all and end all" concerning butterflies in the eastern United States. To its great credit, it generally succeeds.

A reviewer is, of course, asked to assess "pluses and minuses." Regarding these, I have had a chance not only to gather my own impressions over the last months, but also to listen to numerous other lepidopterists who have used the new field guide since it appeared.

Opler and Malikul's text closely follows Opler's previous work with Krizek on eastern butterflies (Opler and Krizek, 1984), which won considerable popular and professional acclaim. Taking off westward from the Opler and Krizek text, however, the new "Peterson Guide" includes treatments for many additional species whose distributions either overlap, or abut, the authors' arbitrary "eastern" border (the 100th geographic meridian). Most of the book's comparatively few problems result from inconsistencies or omissions in this latter effort. The book also appears to be the first popular guide to use the new standardized "common names" for North American butterflies (Miller, 1991).

Overall book format follows the standard for Peterson Guides, departing mostly from Klots' by the addition of (1) distribution maps and (2) thirteen color plates showing butterflies in nature. The latter, so-called "natural pose" photos have been the rage in recent years, but are of questionable value for diagnostic purposes. Fortunately (and in contrast to some other recent field guides), Opler and Malikul do not rely exclusively on these field-photos for butterfly identification. Rather, Malikul has skillfully executed thirty-five color plates in the "diagnostic" painting style employed by other Peterson Guides—concise renderings with pointer arrows noting outstanding features. These illustrations are excellent and, in contrast to Klots', not simply limited to the "higher" butterflies. Full color plates are also included for the dingier-looking skipper butterflies, and these add greatly to the usefulness of the